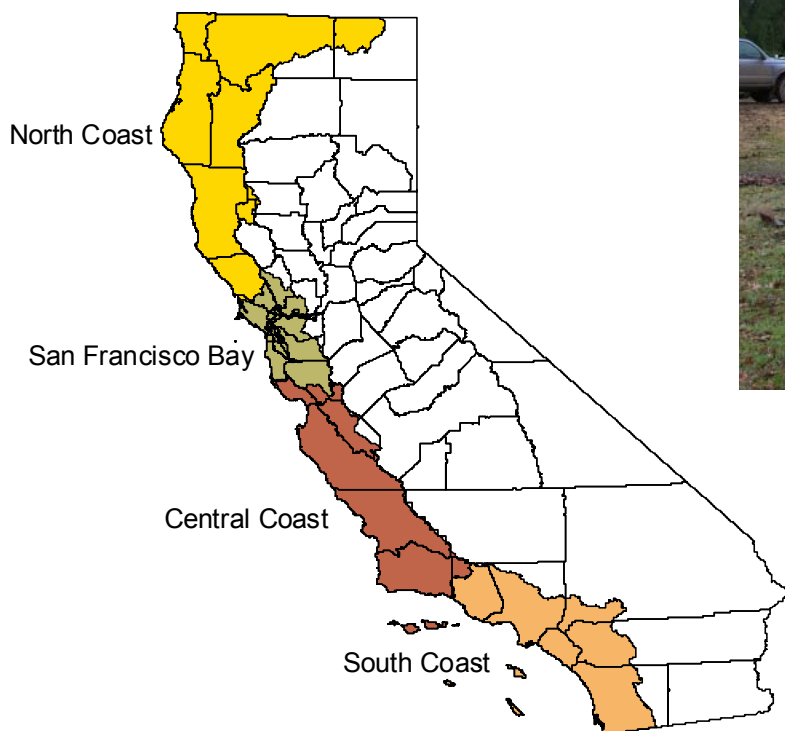


# CALIFORNIA COASTAL SALMONID RESTORATION MONITORING AND EVALUATION PROGRAM

## Interim Restoration Effectiveness and Validation Monitoring Protocols

March 2003



California Department of Fish and Game  
The Resources Agency  
State of California

Development of these monitoring protocols was made possible by funding from the Fisheries Grant Restoration Program's Salmon Steelhead Trout Restoration Account through the recommendation of the California Coastal Salmonid Restoration Grants Peer Review Committee.

## PREFACE

In 2001, the California Department of Fish and Game (DFG) contracted for the development of interim effectiveness and validation monitoring protocols. They were completed in March 2003. The protocols are intended to measure the effectiveness of efforts to improve and conserve coastal watersheds, streams and anadromous fish habitat. The interim protocols are presented in this manual. They are being made available to qualified investigators for use with proposed and/or completed restoration projects in coastal California watersheds. Additional field tests will help refine and improve these protocols on an adaptive basis. In coordination with these efforts, the Fisheries Restoration Grants Program made additional grants to:

- Complete monitoring protocol development;
- Field test all effectiveness and validation monitoring protocols;
- Complete a data management support system;
- Provide training in protocol usage;
- Develop statistical sampling designs for statewide coastal monitoring;
- Begin testing the implementation procedures for a comprehensive restoration effectiveness monitoring program.

By the spring of 2005 it is anticipated that the Department will have formalized the implementation, effectiveness, and validation monitoring protocols and incorporate them into an updated *California Salmonid Stream Habitat Restoration Manual*.

## ADDITIONAL INFORMATION

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**CAUTION:** This report and the protocols contained within it are currently in a draft form. The report is undergoing scientific review and may be substantially revised. The protocols have received some field testing but more is planned. Readers desiring further information should contact the Principal Investigators:

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## CONTENTS

### **Part I. Monitoring Fish Habitat Restoration Projects**

Part I provides interim protocols for monitoring fish habitat improvement projects throughout coastal California within the current or historic ranges of anadromous salmonids. They include:

- Qualitative protocols for implementation and effectiveness monitoring of all projects types;
- Quantitative protocols for monitoring instream, riparian, and road projects.

These protocols are applicable only to physical and chemical components of instream habitat and riparian vegetation.

### **Part II. Validation Monitoring Of Watershed Restoration: Guidelines for California Coastal Watersheds**

The California Department of Fish and Game supports watershed improvements in coastal regions to assist in anadromous salmon and steelhead trout population recovery. To date however, no validation monitoring protocols have been developed for evaluating the response of salmon and steelhead to coastal watershed restoration efforts. This report is the first step in developing those needed validation monitoring protocols. This report includes:

- A review of existing biological monitoring programs;
- A list of program objectives and considerations for the design of a validation monitoring program;
- Conceptual models of the biological responses to restoration actions.

Part II is organized around stream and watershed features that are the subject of restoration actions. Topics include riparian condition, channel morphology, large woody debris, sediment, and water quality parameters, including turbidity, nutrients, dissolved oxygen and water temperature.

### **Part III. Validation Monitoring of Watershed Restoration in California**

Validation monitoring protocols for assessing the response of salmon and steelhead populations to coastal watershed restoration have been developed, and a report describing these protocols is under preparation. Part III is a draft copy of that report, which describes draft validation monitoring protocols for measuring:

- Juvenile salmon and steelhead condition and fitness;
- Juvenile salmon and steelhead abundance and population size;
- Salmon and steelhead smolt production;
- Adult salmon and steelhead escapement.

Each of the three parts of this report contains a table of contents specific to its subject matter. An Appendix is also provided following Part III, which lists watershed restoration action categories, objectives of these actions, and validation monitoring criteria.

This page provided for your notes:

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